Montgomery County Board of Education
Montgomery County Schools
Carver Educational Services Center
850 Hungerford Drive
Rockville, MD 20850

February 8, 2016

Dear Montgomery County Board of Education Members,

I would like to bring to your attention the following- The MCPS Statement Concerning Deployment of Wireless Computing Technologies and Radiofrequency Monitoring Summary Report contains:

1. False Statements: This document details the over 32 false statement on the MCPR RF webpage and provides documentation to each erroneous statements. I personally made inquiries as to the factual nature of MCPS statements from agencies such as the FCC, FDA, NCI and the American Cancer Society. *These agencies all confirmed certain statements to be 100% inaccurate.*
2.Outdated Statements: Why is MCPS using decade old scientific reviews as "proof"? Each outdated document is cited. The MCPS community deserves best available science, not outdated reviews.
3.Wireless Funded Statements: MCPS copiously cites sources that are either directly *fully funded* by the wireless industry itself and/or by persons whose jobs involve consulting for the wireless industry or making money by designing products for the wireless industry. The funding source of such statements should at least be noted *if not removed*.
4. Misleading Statements: Statements are made that validate the opinion of MCPS but are not a true representation of the body of science nor the organization MCPS references. MCPS seems to be cherry-picking in that MCPS puts forth"quotes" which are missing *the rest of the statement the cited organization made.* Such selective information presentation is misleading to families and staff who should be given *all information in a transparent fashion.*
5.No Proof of Safety For Students and Staff: Multiple experts have written to MCPS detailing problems with the 14,000 dollar measurement report citing inadequate instrumentation, inprecise measurements and a lack of adequate documentation on exposure scenarios. There is a sufficient number of concerns that it seems this Measurement Report *cannot* be used to verify whether the radiation levels are safe for students and staff. The parents, teachers and staff of Montgomery County Schools deserve accurate responsible information on the radiation levels in MCPS schools.

For MCPS to put forth information such as is on their website as proof of safety is an egregious error. Comparing MCPS's measurements to FCC standards is meaningless as FCC limits are known to be hundreds of thousands times too high to protect public health.

A total of 15 experts have written MCPS about the health risks of wireless school networks and their concerns with the radiofrequency webpage and measurement report. They all recommend the schools use safe technology. Why are these expert letters not posted? Why is their information not integrated into the webpage for the public? Why isn't MCPS responding to the concerns they are raising?

Dr. Martha Herbert's Letter, Dr. Anthony Miller's Letter, Dr. Lennart Hardell's Letter ., Dr. Carpenters Letter Dr. Olle Johansson's Letter., Dr. Devra Davis' Letter , Cris Rowan, occupational therapist Letter Here, Dr. Martin Pall's letter Katie Singer's Letter ., Cindy Sage and Trevor Marshal Letter, Ellie Marks Letter , Arthur Firstenberg Letter., Mikko Ahonen PhD, Lena Hedendahl MD and Tarmo Koppel MSc PhDs Letter, Cece Doucette's Letter, Alisdair Philips Letter, Lloyd Morgan's Letter

The MCPS site was already changed twice after we repeatedly wrote MCPS to remove the unfactual statements. Only two statements were removed. The MCPS Statement *still contains an abundance of false and misleading statements- over 30 false statements in fact.* Once all of these false, misleading, and wireless funded statements are removed, MCPS *would have little text left on the webpage.*

MCPS did get one thing right. The webpage states *"It is not ethical to test a substance by exposing people to it and seeing if they get cancer from it.*" Right now MCPS students are the equivalent of guinea pigs and are being exposed to unprecedented levels of radiofrequency radiation without their knowledge or consent. We adults were not exposed to such levels as children.

Appendix V in this letter contains information on the mice and rat studies underway at the National Institute of Health Science (NIEHS) National Toxicology Program (NTP) where rats are being exposed to low level (FCC compliant levels just like MCPS) radio-frequencies at very low levels for hours a day *just like our children in schools.*

Wouldn't it be ethical *to wait* until the NTP research results are available before the school system is de-facto performing what is basically the same study but instead of rats *it is on children and teachers and staff.* The rats, the mice *and MCPS children are being exposed to* what the National Toxicology Program calls "chronic exposure to modulated radiofrequency radiation".

Our children are not lab rats. Yet, just like the NTP rats, today's schoolchildren will be "the statistics". I imagine that a decade from now, researchers will count up the numbers of young adults with cancer, neurological disease and infertility and look at the connection with lifetime wireless exposures.

It is unethical to knowingly post false information and not to act to protect children when such a serious matter is brought to your attention. You have a duty of care to every student and your job is to ensure their safety. Wireless is not safe and MCPS has yet to provide any documentation of safety.

Please remove the false and misleading information on the MCPS webpage. I ask that MCPS take **immediate action** to minimize radio-frequency exposures in classrooms. Please hardwire the chromebooks and tablets, install safe technology communication networks and teach students and staff how to minimize exposures to cell phone and wireless radiation to protect their health and future.

Sincerely,
Theodora Scarato LCSW-C

APPENDIX 1: False Statements Itemized with documentation
APPENDIX II: Outdated References
APPENDIX III Wireless Funded Research and Statements
APPENDIX IV: Misleading Statements including Details on Why the RF Measurement Report is Inadequate to Assess Student Safety

APPENDIX V: **The National Toxicology (NTP) Study on Rodents and Radio-Frequency**

APPENDIX 1 FALSE STATEMENTS
FALSE STATEMENT 1

On the Radiofrequency FAQ's MCPS states, "The FCC guidelines are not outdated."

MCPS's statement that the FCC regulations are 'not outdated" contradicts what the United States Government states about the over *twenty years old* regulations:

- T**he Department of the Interior states** that *"The electromagnetic radiation standards used by the Federal Communications Commission (FCC) continue to be based on thermal heating, a criterion now nearly 30 years out of date and inapplicable today."* Read The 2014 Letter.
- **In 2012, the Government Accountability Office (GAO)** published a 2012 Report that states, "The Federal Communications Commission's (FCC) RF energy exposure limit *may not reflect the latest research"* and the report officially recommended that the FCC "Formally *reassess* the current RF energy exposure limit, including its effects on human health, the costs and benefits associated with keeping the current limit, and the opinions of relevant health and safety agencies, and change the limit if determined appropriate."
- **The FCC is formally in review of these 20 year old standards** and has stated it is not a health and safety organization and has called for expert comments. The FCC has so far received over 900 comments and they can be accessed at the FCC here: go to the FCC's web site for Proceeding Number 13-84: http://bit.ly/1aGxQiq.
- **The 2008 National Academy of Sciences (NAS) Report**, Identification of Research Needs Relating to Adverse Health Effects of Wireless Communication, was tasked to identify any inadequacies in the research upon which the current US Radiofrequency radiation (RF) safety guidelines are based. The NAS Report found numerous inadequacies in that research record. An inadequate research record results in safety regulations that fail to address all exposures encountered by the public. Based on the 2008 NAS findings it cannot be asserted that US RF safety policy protects all members of the public from all mechanisms of harm in all exposure scenarios.
- **The American Academy of Pediatrics** has repeatedly called on the government to update its regulations stating that "Current FCC standards do not account for the unique vulnerability and use patterns specific to pregnant women and children." Read it here.
- **The California Medical Association** passed a Wireless Resolution that states :

  Whereas scientists are increasingly identifying EMF from wireless devices as a new form of environmental pollution with a growing body of peer reviewed scientific evidence finding significant adverse health and biologic effects on living organisms with exposure

to low levels of non-ionizing microwaves currently approved and used in wireless communication, and
Whereas peer reviewed research has demonstrated adverse biological effects of wireless EMF including single and double stranded DNA breaks, creation of reactive oxygen species, immune dysfunction, cognitive processing effects, stress protein synthesis in the brain, altered brain development, sleep and memory disturbances, ADHD, abnormal behavior, sperm dysfunction, and brain tumors; and...Resolved, That CMA support efforts to implement new safety exposure limits for wireless devices to levels that do not cause human or environmental harm based on scientific research. Read it here . Read a magazine article on their resolution here.

- **In May 2015, over 200 scientists from 39 nations** who have authored more than 2,000 articles on this topic appealed to the United Nations to address "the emerging public health crisis" related to cell phones and other wireless devices. These scientists state that "the ICNIRP guidelines do not cover long-term exposure and low-intensity effects, and are " insufficient to protect public health." They also state that "the various agencies setting safety standards have failed to impose sufficient guidelines to protect the general public, particularly children who are more vulnerable to the effects of EMF." See the International EMF Scientist Appeal at https://emfscientist.org.
- **The LA School District Uses a RF-EMF Exposure Threshold 10,000 Less Than the FCC Limits:** The OEHS supported a precautionary threshold level that is 10,000 times lower than the current Federal Communications Commission standard. Read the RF Report the LA School District Used to recommend a cautionary exposure level. If the FCC limits are "not outdated" then why would they do this? RADIOFREQUENCY (RF) EVALUATION REPORT Use of Wireless Devices in Educational Settings

Dr. De Kun Li sums up the problem with FCC regulations:
"In summary, we do not currently have scientific data to determine where the safe RF exposure level is regarding the non thermal effects. Therefore, it should be recognized that we are dealing with uncertainty now and most likely for the foreseeable future. The question for government agencies especially those concerned with public health and safety, is, given the uncertainty, should we err on the side of safety and take precautionary measures avoidance measures? *Unknown does not mean safe. "*
Letter from Dr. De-Kun Li, MD, PhD, MPH to the FCC

It is erroneous for MCPS to assert that FCC levels are "not outdated" when the US government and health authorities state otherwise. What scientific expertise does MCPS have in this area to make such a statement that contradicts the US government?

FALSE STATEMENT 2

MCPS states that, "Using the Group 2B classification of the entire spectrum of radiofrequencies as an indication that Wi-Fi is harmful when the classification came about due to extremely heavy cell phone use and not Wi-Fi does not accurately represent the intention of the classification."

What MCPS should be saying: The World Health Organization specifically and repeatedly has stated the carcinogenic classification is for radiofrequency radiation *from any source.* Note this documentation:

- Wireless *radiofrequency* radiation is classified as a "Possible Human Carcinogen" by the International Agency for Research on Cancer (IARC) of the World Health Organization(WHO) Read The Lancet's published statement by the IARC from 2011 on cancer risk of wireless radiation.
- The Class 2B classification includes wireless radiation from *any transmitting source* such as "cellphones, baby monitors, tablets, cell towers, radar, other wifi, etc". It applies to RF-EMF in the range of 30 KHz to 300 GHz *emitted from any device.* These statements are detailed in *The Lancet* article and in the related WHO IARC press release in 2011. All wireless electronic devices emit RF-EMF (wireless radiation). It *does not matter* what type of device is the source.
- Dr. Robert Bann, the World Health Organization International Agency for Research on Cancer Secretary has stated (on several occasions) how the WHO experts *specifically intended this classification to apply to the full range of radio frequency radiation which includes wifi as well as cell tower radiation.* Here Dr. Bann spell this out in his detailed lecture in 2011 found here and in his writing found here.

  > *"It should be noted that the working group in the overall evaluation decided to make a generic evaluation of radio frequency fields and did not want to limit it to mobile telephone use and all other exposures .. that was based on the diversity of the exposures in the animal cancer studies where different types of radiation with different frequencies across the radio frequency part of the emf spectrum were noted and the radiation from the environmental sources.(i.e Wi-Fi, Cell Towers etc) . and from the mobile telephones is basically and physically speaking the same type of agent ."*

I decided to write the World Health Organization's Head of the IARC Monographs Programme Dr. Kurt Straif *myself* last month about this. I asked him if the classification applies to Wi-Fi. I was told the following:

> *"IARC's evaluation of the cancer hazards from exposure to Radiofrequency Electromagnetic Fields covers all sources of RF-radiation." and "IARC classified radiofrequency electromagnetic fields (including Wi-Fi signals and mobile phone signals) as possibly carcinogenic to humans (Group 2B) "*

Read the Email exchange here.

FALSE STATEMENT 3 through 6

MCPS states that "The FCC, the American Cancer Society (ACS), the Food and Drug Administration (FDA), and the National Cancer Institute (NCI) all have conducted reviews as recently as 2013 and found that there is no basis to establish a different safety threshold."

This is false. I wrote the FCC, American Cancer Society, and the National Cancer Institute *and they all came back with the same response*. MCPS statement is false and and inaccurate. None of these institutions have done such a review nor do they have the mandate to speak to the issue of safety thresholds *just the FCC,* and that review was initiated because of the GAO report stating the "thresholds may not reflect latest research". The review has not been completed and at this time it is unknown if there has been acy action on the over 900 submissions by experts calling for more stringent regulations.

Here are the responses I got when I inquired into MCPS's statement asking if it was accurate that they had done a review that "**found that there is no basis to establish a different safety threshold."**

American Cancer Society

"I know of no ACS finding or statement regarding safety thresholds of radio frequency fields."
-Statement by Dr. Otis Brawley| Chief Medical Officer of the American Cancer Society

"First, the American Cancer Society was not the organization who conducted the 2013 scientific review. So, we suggest you go back to the source and clarify what organization the school district consulted to make that statement."
Read the Email from the American Cancer Society to Scarato here.

The Federal Communications Commission

"...we are not aware of any report attributable to the FCC that would support the statement that you quote."
"It looks like the statement you quoted might be a slight misinterpretation of an FCC consumer guide on RF radiation, in conjunction with FCC action in 2013 opening an Inquiry into its RF Safety rules."

Read the FCC Response to Scarato on December 15, 2015

The National Cancer Institute

The National Cancer Institute (NCI) wrote back that the "review" was in fact- a webpage content review, *not a review of research* and *certainly not* a review of the adequate protection from safety thresholds. Please read these excerpts from our email exchange with NCI.

"We are unclear as to the source of this language indicating that the NCI "conducted a review (on FCC) limits as recently as 2013 and found that there is no basis to establish a different safety threshold." This statement, as written, is incorrect. As I describe above, and as I have noted in our previous correspondence, NCI staff have conducted literature reviews to update our fact sheets and will continue to do so. Neither the literature reviews, nor the fact sheets, make safety determinations."

The literature reviews I describe above are not intended to establish or evaluate standards or set or evaluate recommendations."

Clearly, a website update or literature review of a few studies is not the same thing as a review of research to determine safety threshold adequateness.
Read the Email Exchange with the National Cancer Institute here.

The Food And Drug Agency

"After extensive research, we were unable to find any public information regarding a review of radiofrequency radiation."
Division of Drug Information | Center for Drug Evaluation and Research
Food and Drug Administration on Feb 2 2016

"FDA did not conduct a formal meta-analysis nor a formal review of RF studies in 2013."
Daniel Kassiday SME: Electronic Product Radiation Control
Read the FDA letters to Scarato Here.

In conclusion, no such review showing these safety thresholds has been done *by any of these agencies.* These statements are FALSE.

Such a statement by MCPS represents a myth many people have about our federal regulations in regards to wireless exposures. We think that our government health agencies have appropriately dealt with wireless. In fact, the US has not a single health and science agency mandated to focus on the issue. The EPA, FDA and NCI are not tasked to ensure the RF safety thresholds are safe. In fact , the EPA was working on this issue two decades ago, but then Congress gave jurisdiction to the FCC and told the EPA not to do anything more.

Please read the following by the FCC, "*is not a health and safety agency, we defer to other organizations and agencies with respect to interpreting the biological research necessary to determine what levels are safe. As such, the Commission invites health and safety agencies and the public to comment on the propriety of our general present limits and whether additional precautions may be appropriate in some cases, for example with respect to children.* Read that statement here.

Over 900 submissions with dozens of scientists have submitted to the FCC review. The FCC which is NOT a health agency and has no medical experts on staff, is supposedly tasked to deal with this issue *and defer to these organizations, but has not acted*. In fact, the Open Docket from 2013 that supposedly is a review is just sitting there, now three years old.
"We recognize our responsibility to both protect the public from established adverse effects due to exposure to RF energy and allow industry to provide telecommunications services to the public in the

most efficient and practical manner possible. In the Inquiry we ask whether any precautionary action would be either useful or counterproductive, given that there is a lack of scientific consensus about the possibility of adverse health effects at exposure levels at or below our existing limits. Further, if any action is found to be useful, we inquire whether it could be efficient and practical." Read it here.

Note that the FCC *can wait years* to do anything as there is no timetable they must follow. *It could be when the kids in kindergarten have all graduated.* The current FCC Chair Tom Wheeler is in charge of this decision and Wheeler was accused of suppressing the science showing harm from radiofrequency radiation in the 90's by his top scientist *when he headed the wireless lobby group, the CTIA.*

Read the Harvard Law publication *Captured Agency: How the Federal Communications Commission is Dominated by the Industries it Presumably Regulates* detailing how the Wireless Industry has unchecked influence on our government stating, *"It is these hardball tactics that recall 20th century Big Tobacco tactics."*

Read Harvard Book here.

FALSE STATEMENT 7

In the Memorandum by MCPS Office of Technology it states that "*All levels were below the Bioinitiative 2007 precautionary level . These are the very level the Safe Tech for Schools Maryland group has argued is safe for human exposure*." Read it here.

This is false. No one in our group has ever stated that the Bioinitiative 2007 level is safe and we challenge MCPS to show where any of the members of our group cited the Bioinitiative 2012 level as safe or where we have even presented that limit as a number for MCPS to follow. *Why would we use that outdated Report as it is superseded by the Bioinitiative 2012.* We certainly have used the Bioinitiative 2012 levels to share information on what that group advises. Such a false statement and should be removed.

FALSE STATEMENT 8 through 17

In the MCPS FAQs section, there is a list of what "public health organizations have to say about radiofrequency" . I have detailed here the information given on 8 countries which is erroneous and misleading to the reader. MCPS neglects to give the actual full statements, position and recommendations of these countries' expert reports. Additional, MCPS basically cut and pasted from a research review paper but cherry picked on which sentence to pull leading to a ninth false statement.

It is false to state something is a "concluding" statement *when it is not the conclusion of the agency.*

1. France: MCPS states that the French ANSES Report concludes "No new proven health effects".

MCPS has neglecting to state that in the conclusion of The French ANSES Report which specifically recommends precautions, it is stated,

- **ANSES details these health effects:** *"following exposure to RF fields, the following effects have been observed: various effects on neuronal cell death depending on the type of study (in vitro or in vivo): changes (increase or decrease) in the total number of neurones and increase of cells in apoptosis following chronic exposure in vivo (in a limited number of studies); an effect on the astrocyte marker (GFAP) related to inflammation (probably transient effect) following chronic exposure in vivo; an oxidative stress-type effect following prolonged exposure to radiofrequencies on mitochondrial DNA in neurones (on the basis of a single in vitro study). Mitochondrial DNA is particularly sensitive to oxidative stress due to a lack of histone-type protective proteins, a reduced repair ability, and proximity of the respiratory chain in the mitochondrial inner membrane. This could explain the discrepant results here compared to most studies that did not target this type of DNA; changes in electrical activity in the brain (especially the power of alpha rhythm)."*
- **ANSES made recommendations to reduce exposure to children**, to study the effects of cell towers and investigate how to reduce public exposures.[1] Read the **specific recommendations**.
- **This ANSES Report led to the passing of one of the most strong National EMF reduction Laws in any country whereby Wi-Fi is banned in France for young children,** companies are fined for not showing radiation reductions methods in advertisements and a public health awareness campaign is being developed.[2]

2. Belgium: MCPS only cites Belgium's Superior Health Council as concluding that "No proven health risks. Long-term health risks cannot be ruled out." This is inaccurate.

MCPS leaves out the following:

- "**Experts – including those on the Superior Health Council – advise everyone to limit their exposure to mobile phone radiation."**[3] **Read it here.**
- Belgium has banned cell phones for children: As of March 2014, mobile phones for young children were banned because of radiation concerns. [4] Also left out of the MCPS summary were the Council's statements that "The concern is also that the cumulative exposure of the current generation of children and adolescents in their adult lives will be much higher than that of the current adults. The recent classification of mobile phone radiation as possibly carcinogenic is an additional reason to be cautious."
- **The municipality of Ghent has specifically banned Wi-Fi for young children due to health concerns.**[5]

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[1] **ANSES issues recommendations for limiting exposure to radiofrequencies**

[2] France: New National Law Bans WIFI

[3] http://health.belgium.be/eportal/Environment/ElectroWavesAndNoise/ElectromagneticRadiation/MobilePhone/TipsForPrudentUse/index.htm?fodnlang=en#.VqwBIjYrJR4

[4] Belgium: **New regulation for the sale of mobile phones as of 1 March 2014 http://www.health.belgium.be/eportal/Environment/19096020_EN?ie2Term=phones&ie2section=83#.VIpiON-rR2Q**

[5] **Ghent bans wi-fi from pre-schools and day carehttp://www.flanderstoday.eu/education/ghent-bans-wi-fi-pre-schools-and-day-care**

- **The government of Belgium recommends precautions: "**to reduce your exposure" which includes specific tips for Wi-Fi installations and I quote, " In order to limit the exposure, the following simple measures can be taken: Only switch on your wireless network connection when it is needed. This concerns the wifi adapter in your laptop in particular. Otherwise, your laptop tries to continually connect to the network, and that leads to unnecessary exposure and decreases the life expectancy of the batteries. Place the access point away from places where you spend lots of time." [6]

3. Australia: MCPS says the conclusion by ARPANSA is that "*No substantiated evidence for health risk for people living near base stations. Insufficient evidence for higher risk for children. No need to reconsider exposure limits."*

- Yet MCPS leaves out critical facts about ARPANSA recommendations to reduce exposure! In the published 2014 article **International and National Expert Group Evaluations: Biological/Health Effects of Radiofrequency Fields in the International Journal for Environmental Research in Public Health** the authors state than in Australia the "Radiation Protection and Nuclear Safety Agency (ARPANSA) : *"considers that the classification by IARC corresponds to the current ARPANSA advice, including its advice on practical ways in which people can reduce their exposure"*. ARPANSA has also recommended "*parents should encourage their children use the methods to reduce exposure*".[7]
- **ARPANSA recommends that parents encourage children to reduce exposure.** "It is recommended that, due to the lack of sufficient data relating to children and their long term use of mobile phones, parents encourage their children to limit their exposure by reducing call time, by making calls where reception is good, by using hands-free devices or speaker options, or by texting."[8]

- A**RPANSA details several specific recommendations to reduce exposure with other wireless devices.** Concerning wireless computer networks ARPANSA states that, "if you use them with their antennas very close to the body, you can be exposed to levels closer to the limits of the standard. You can reduce your exposure from these devices by: keeping them at a distance, for example placing the wireless router away from where people spend time reducing the amount of time you use them."[9]

4. Switzerland: MCPS quotes the Federal Office for the Environment FOEN as simply concluding "*No new confirmed health effects. "Absence of proof of health risks" does not automatically mean proof of their absence."*

Clearly MCPS quoted from the review paper but forgot to mention what the research review actually fully states which is *also,* "*In view of the fact that there are gaps in the available data, the absence of proof of health risks does not automatically also mean proof of their absence.* ***From the scientific point of view, a***

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[6] Belgiums Health, Food And Safety Agency Handout on Wireless Devices
http://www.health.belgium.be/internet2Prd/groups/public/@public/@mixednews/documents/ie2divers/19104272_en.pdf

[7] **International and National Expert Group Evaluations: Biological/Health Effects of Radiofrequency Fields**
http://www.mdpi.com/1660-4601/11/9/9376

[8] http://www.arpansa.gov.au/mobilephones/index.cfm

[9] ARPANSA RF FACTSHEET http://www.arpansa.gov.au/pubs/factsheets/ReduceExposure_wirelessDevices.pdf

cautious approach in dealing with non-ionising radiation is still called for. *There remains a need for extensive research into the potential long-term effects".*

In fact Switzerland goes *much further* than this and in fact has a very strong precautionary policy in place.

- MCPS leaves out the following 2015 Federal Office for the Environment FOEN Environmental Report Chapter on Electrosmog that states" Effects can also be detected for weak radiation intensity." and "here is no definitive answer, however, concerning the impacts of long-term exposure" and "Reliable data are needed to monitor the temporal and spatial development of radiation exposure and identify possible health impacts." and "Federal Council imposed stricter installation limit values in this ordinance as a precautionary measure. These values are intended to ensure that exposure is kept as low as possible in locations where people spend time regularly and for extended periods (e.g. in homes, offices and schools). This will help to reduce the risk of possible, as yet unidentified, impacts on health.

  "The federal authorities base the definition of the installation limit values on the precautionary principle enshrined in the Environmental Protection Act (EPA):2 radiation levels should be limited as much as technology and operating conditions allow, provided that this is economically acceptable. Because major gaps still exist in our knowledge about the health impacts of long-term exposure to weak non-ionising radiation, the adopted protective strategy should be pursued consistently."[10]

- **MCPS failed to note** that Switzerland specifically recommends to "Prefer wired over WiFi/WLAN in schools and/or pre-schools "
- **MCPS failed to note** that **Switzerland gives a** detailed description on how to reduce exposure including turning the Wi-Fi off when not in use, installing the access point one metre away from places where you work, sit or rest for long periods of time and keeping laptops off laps. They state that "It is currently not known whether the electromagnetic fields created by WLANs pose a risk to health. WLAN devices generally emit a low level of radiation, *and caution should be exercised primarily when using devices held close to the body, such as laptops, PDAs and Internet telephones.* We would offer the following advice to people who prefer to minimise their personal exposure by keeping the electromagnetic fields in their home or office as small as possible."[11]
- **MCPS failed to note** this full statement in the conclusion from their 2012 **Radiation of radio transmitters and Health** *"In view of the fact that there are gaps in the available data, the absence of proof of health risks does not automatically also mean proof of their absence. From the scientific point of view, a cautious approach in dealing with non-ionising radiation is still called for. There remains a need for extensive research into the potential long-term effects"*[12]

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[10] 2015 Federal Office for the Environment FOEN Environmental Report Chapter on Electrosmog
http://www.bafu.admin.ch/publikationen/publikation/01794/index.html?lang=en&download=NHzLpZig7t,lnp6I0NTU042l2Z6ln1ad1IZn4Z2qZpnO2Yuq2Z6gpJCHd4R2gmym162dpYbUzd,Gpd6emK2Oz9aGodetmqaN19XI2IdvoaCVZ,s-.pdf

[11] Federal Office of Public Health on WLAN http://www.bag.admin.ch/themen/strahlung/00053/00673/03570/index.html?lang=en

[12] Switzerland FOEN 2012 **Radiation of radio transmitters and Health**
http://www.bafu.admin.ch/publikationen/publikation/01739/index.html?lang=de

5. Finland: MCPS quotes STUK as concluding that, "Mobile phone use is not detrimental to health"

This is inaccurate. The Radiation and Nuclear Safety Authority(STUK) website states that, '*The level of exposure to radiation from a mobile phone held next to user's ear can approach the exposure limits. Never before have humans been exposed to equally strong sources of radiation in their living environments. Identifying any health impacts is highly important because practically everybody uses a mobile phone today.*"

- "STUK recommends that unnecessary exposure to radiation from mobile phones be avoided. In particular, children's unnecessary exposure should be avoided as their life-long exposure will be longer than that of those who begin using mobile phone as adults and as only scant research exists on health effects to children."
- Read STUK Recommendations to Reduce cell phone exposure HERE: Use a hands free device, don't use phones reception is poor, the phone should be kept on a table or similar location instead of in the user's pocket.
- Read a news article from 2009 when STUK first recommended restricting the use of mobile phones by children.

6. Germany: MCPS quoted the German Federal Office for Radiation Protection in 2011 as concluding that "Risk perception is linked to media coverage". This is inaccurate. Note the following:

- The Federal Office for Radiation Protection (FORP) provides tips for reducing radiation exposure to smartphones, tablets and wireless devices stating, "*Since long term effects could not be sufficiently examined up to now the Federal Office for Radiation Protection (BfS) recommends to keep exposures to these fields as low as reasonably achievable.*" **Read the precautionary advice here.**
- The FORP recommends landline phone instead of mobile phone base stations and that schools should not connect wirelessly to the internet. **Read a 2015 statement here.**
- **See their poster "Less radiation when Telephoning" here.**
- The German Federal Ministry for Radiation Protection stated in 2007 ,"supplementary precautionary measures such as wired cable alternatives are to be preferred to the WLAN system." See original German Bundestag document here, and an English translation here.

MCPS quotes SSK the German Commission on Radiological Protection. All topics. 2011 as concluding that "*Discrepancy between scientific evidence and risk perception. No overall risks."*

Please note these conclusions by SSK in 2013

- A 2013 Report Electromagnetic Fields of New Technologies - ends its summary with the statement that "In the past, the Commission on Radiological Protection (SSK) has repeatedly emphasised that *devices should be designed with a view to minimizing emissions and user exposure, especially in cases in which technically and economically equivalent alternatives are available* (SSK 2001, SSK 2003).

Furthermore Germany has states that have banned wireless in schools. In Bavaria: The State Ministry of Education and Cultural Affairs: "For precautionary reasons the Federal Office for Radiation Protection recommends for schools that if a wireless network is used to place its components in suitable

locations and to prefer the use of wired network solutions whenever possible." In 2007 Parliament recommendation to all schools to *not* install wireless LAN networks. Frankfurt: "In Frankfurt's schools there will be no wireless networks in the short or mid term. The Local Education Authority did not wish to conduct a *"large scale human experiment,"* said Michael Damian, spokesperson of the Head of the School Department Jutta Ebeling.

7.England: MCPS once again selectively quoted from the research review. MCPS states of the ISLE of MAN Phone Masts/ Children that it concludes, "*no definite demonstrable effects on children", leaving out the full statement directly quoted in the review which is:*

"The Chief Minister of Isle of Man [122] in UK had set up a committee to review the scientific publications on health impact of mobile telephone masts. The recommendations of the committee in 2009 [123] were: "…although there are no definite demonstrable effects on children, it would be prudent not to site base stations in locations where children are likely to be exposed to the beams for a long duration". The committee also recommended "The use of precautionary principle in the siting of mobile phone masts".

8. MCPS cites Tanzania's TCRA as a "public health body" concluding "No substantial evidence for harmful health effects.Many benefits of modern technology."

First, TCRA is *not a public health body* but in fact **The Tanzania Communications Regulatory Authority (TCRA)** is a quasi independent Government body responsible for regulating the communications and broadcasting sectors in Tanzania and it is in no way a health and safety organizations with any Doctors on staff who have the credentials to make such a safety determination. Its mission is to develop an effective and efficient communications regulatory framework. Why is MCPS quoting *not a study* but simply a 'public statement' by the agency from 2010 that is nowhere to be found online anymore? This should be removed from the list as it is not a public health body and is outdated.

9. MCPS states of the countries they cite on their chart that, "In reviewing the large body of existing scientific evidence, health organizations across the world have all reached the same conclusion: there are no proven negative health effects from Electromagnetic Fields (EMF) that is within existing safety guidelines."
This is not even the conclusion of the paper they pulled the quotes from. In fact, the authors of **International and National Expert Group Evaluations: Biological/Health Effects of Radiofrequency Fields in the International Journal for Environmental Research in Public Health** end with their review by stating that *"In general, the expert groups suggested a reduction in exposure levels, precautionary approach, and further research."*[13]

What is the international policy response to children and radiofrequency fields?

[13] **International and National Expert Group Evaluations: Biological/Health Effects of Radiofrequency Fields**
http://www.mdpi.com/1660-4601/11/9/9376

I point you to *a more recent 2015 published review* on international advisories by Dr. Redmayne entitled International policy and advisory response regarding children's exposure to radio frequency electromagnetic fields (RF-EMF) which states that, "*Over 20 countries and municipalities have issued precautionary advice to the public concerning wireless exposures. This review of policy and advice regarding children's RF-EMF exposure shows a wide variety of approaches which I have categorized and tabulated ranging from ICNIRP/IEEE guidelines and "no extra precautions needed" to precautionary or scientific much lower maxima and extensive advice to minimize RF-EMF exposure, ban advertising/sale to children, and add exposure information to packaging.*" This review concludes with the statement, "*Therefore, minimum exposure of children to RF-EMF is recommended."*[14]

FALSE STATEMENT 18

MCPS has erroneously defined the Precautionary Principle. MCPS says, *"The "Precautionary Principle" dictates that unless something is proven absolutely safe, then it should be avoided."*

This is false and not the definition of the Precautionary Principle in any dictionary I am familiar with and by using such an inaccurate definition it misleads parents and the Montgomery County Community.

- **American Journal of Public Health Definition:** *"The precautionary principle asserts that the burden of proof for potentially harmful actions by industry or government rests on the assurance of safety and that when there are threats of serious damage, scientific uncertainty must be resolved in favor of prevention."* Read it here.
- **Wikipedia definition**: "The precautionary principle or precautionary approach to risk management states that if an action or policy has a suspected risk of causing harm to the public or to the environment, in the absence of scientific consensus that the action or policy is not harmful, the burden of proof that it is *not* harmful falls on those taking an action." Read it here.
- **Collaborative on Health and the Environment Definition:** "The precautionary principle is a guide to public policy decision making (Raffensperger and Tickner 1999, Schettler et al. 2002). It responds to the realization that humans often cause serious and widespread harm to people, wildlife, and the general environment. According to the precautionary principle, precautionary action should be undertaken when there are credible threats of harm, despite residual scientific uncertainty about cause and effect relationships." Read it here.

For MCPS to use a definition like this makes a mockery of those calling for it. If that were truly the definition then we would not use any product or go anywhere, as nothing can be absolutely proven safe.

The main point behind the precautionary principle is that there is **a large body of compelling research** pointing to evidence of serious harm from wireless *and* although it has not been 100% proven, it would

[14] International policy and advisory response regarding children's exposure to radio frequency electromagnetic fields (RF-EMF) http://www.ncbi.nlm.nih.gov/pubmed/26091083

be prudent to take action. **If we don't** take action now- we are talking about generations of children with cancer, fertility damage, neurological issues and illness *which could have easily been prevented.*

Over 20 countries are taking precautionary action because of the potential for serious harm.

FALSE STATEMENT 19 through 23
MCPS states, "However, it is important to note that, the "Precautionary Principle" is already implemented in the Wi-Fi guidelines and exposure limits set by WHO, FCC, Health Canada, Public Health England, and other public-health bodies."

MCPS's statement is nonsensical and false. How can MCPS state that there is no evidence wireless could be harmful and then states they already use precautions? Such a false statement also speaks to a lack of understanding of the complexity of this issue by MCPS . MCPS (in that sentence) has grouped the FCC with the WHO and Public Health England, *which are three very different entities with different expertise, different mandates and different missions.*

Nonetheless, technically neither the WHO, FCC, Health Canada or England have implemented the precautionary principle in regards to public exposure limits.

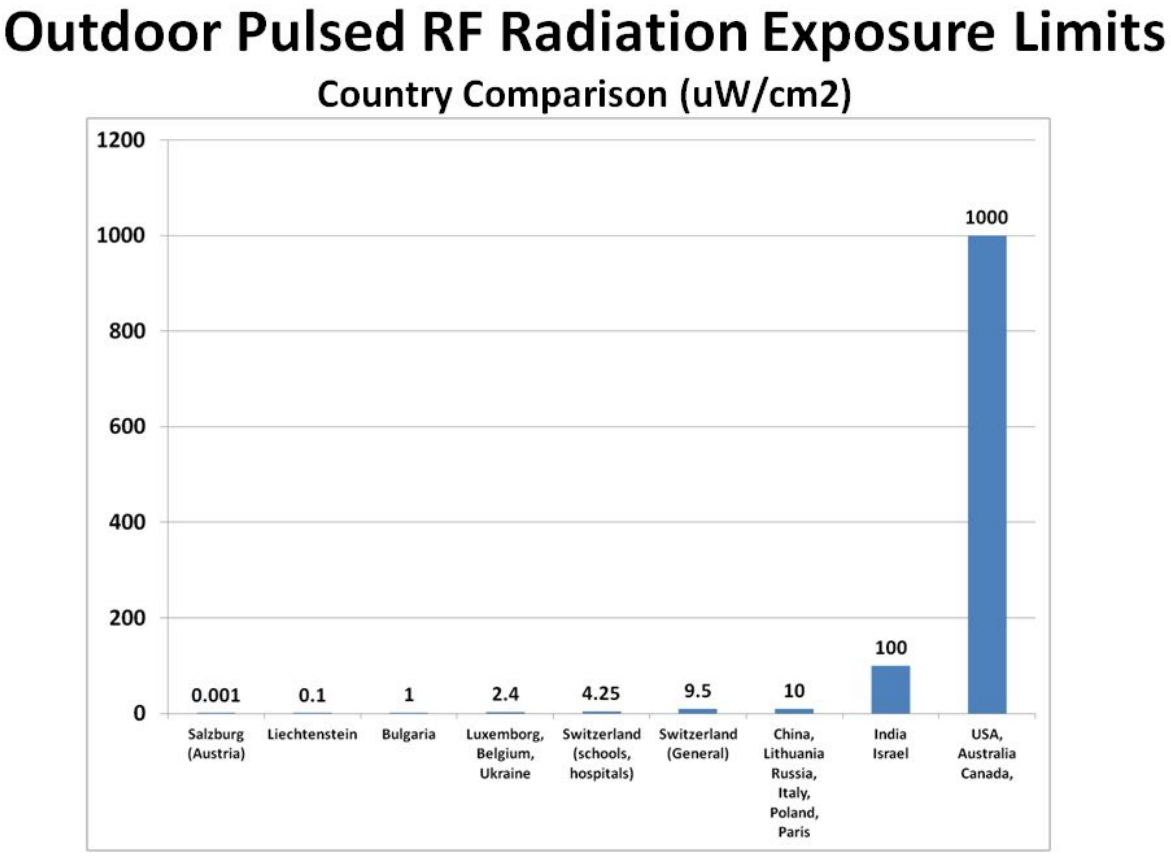
The World Health Organization (WHO)
The WHO is not tasked to implement anything and specifically states that its role is not to

Canada
See below documentation that Canada has certainly not implemented the precautionary principle.
"Currently, RF exposure guidelines in various countries (China, Russia, Italy, Switzerland), based on biological effects, are 100 times more stringent than the guidelines based on an outdated understanding of RFR that relies primarily on thermal effects that includes Health Canada's Safety Code 6. ...Furthermore, Health Canada does not adhere to the Precautionary Principle used by states when serious risks to the public or the environment exist but lack scientific consensus."

- **Scientific Declaration to Health Canada (International Doctors) 2014**

Why would Doctors write Health Canada asking them to utilize the precautionary principle if they were already doing it?

The FCC
The FCC (not a health and science agency) states that
Want proof? If the US followed the Precautionary Principle *then why do their regulations look like this below.*



FALSE STATEMENT 24 through 28

MCPS Technology Staff stated in a BOE meeting that *wireless RF-EMF is arguably "not radiation"* Watch it at the September 21, 2015 BOE meeting.

This is false. MCPS needs to be honest with the MCPS community that this is *non-ionizing radiation.*

- The FCC states that, "Radio waves and microwaves are forms of electromagnetic energy that are collectively described by the term "radiofrequency" or "RF." RF emissions and associated phenomena can be discussed in terms of "energy," "radiation" or "fields." Radiation is defined as the propagation of energy through space in the form of waves or particles. Electromagnetic "radiation" can best be described as waves of electric and magnetic energy moving together (i.e., radiating) through space…" [15]
- The United States Navy states very clearly that, "Radio waves and microwaves emitted by transmitting antennas, illustrated in Figure 3, areone form of electromagnetic energy. They are collectively referred to as "radiofrequency" radiation (RFR)."[16]

[15] https://transition.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet56/oet56e4.pdf
[16] http://www.public.navy.mil/navsafecen/Pages/acquisition/radio_frequency-radiation.aspx

FALSE STATEMENT 29

In the FAQs section "What were the findings of the RF Monitoring conducted in MCPS schools?" MCPS states that "because students are not expected to be using their Chromebooks continually during the day, actual RF exposure for any given day is expected to be similar or less than the measured values."

- This is non-factual, conjecture and based on no science. Measurements presented were for 6-minute time-averaged, whole body exposure. Clearly, there is no documentation that the radiation levels can be *less.* Indeed, the power levels may be similar or more or less for every 6 minutes of exposure depending on various factors that MCPS neglected to detail in their "Report" . What is missing is that that different schools have different curriculum using Chromebooks. Many parents report children are on Chromebooks in several classes, some less. In some classes all may have cell phones on, actively transmitting adding to top RF exposure in the room. No where did MCPS document how many Chromebooks were on in the room nor what they were doing. When 30 kids are downloading a video, for example, the radiation exposure *will be more.* None of this was taken into account for the radiation readings and MCPS cannot state that RF exposures could be "less". That is false.

FALSE STATEMENT 30

MCPS quotes the 2003 Non-Ionizing Radiations–Sources, Biological Effects, Emissions and Exposures which is from the Proceedings of the International Conference on Non-Ionizing Radiation at UNITEN (ICNIR2003) Electromagnetic Fields and Our Health 20th –22nd October 2003 Non-Ionizing Radiations –Sources, Biological Effects, Emissions and Exposures as an example of statements by "major public health organization." Read it here http://www.who.int/peh-emf/meetings/archive/en/keynote3ng.pdf

This is false and should be removed. This is not a statement by a public health body! It is an abstract of a 2003 paper but by one person, Kwan-Hoong Ng of the Department of Radiology University of Malaya Kuala Lumpur Malaysia. *Why is this on a list of statements by public health organizations?* Furthermore, this is clearly outdated from 2003 and should be removed.

FALSE STATEMENT 31

In section 4.2.4 of the RF Summary Report it is stated, "As discussed above, the Bioinitiative Report (2007 and 2012) is a publication released on the internet by a group of 14 "...scientists, public health and public policy experts to document the scientific evidence on electromagnetic fields."

This is false. T**he Bioinitiative 2012 report was written by 29 authors from ten countries including ten MDs and 21 PhDs who are worldwide experts in the field.** Authors include three former presidents and five members of the Bioelectromagnetics Society. One author is Chair of the Russian National Committee on Non-Ionizing Radiation, and another is Senior Advisor to the European Environmental Agency.

Dr. Carl F. Blackman former research scientist in the Environmental Carcinogenesis Division of the US Environmental Protection Agency who served on the World Health Organization committee to evaluate the health implications of radiofrequency radiation exposure (Environmental Health Criteria #137, 1993), on a committee of the International Agency for Research on Cancer (IARC) to evaluate the carcinogenic potential of low frequency electric and magnetic fields in 2001 (Volume 80, 2002) and as chair of the genetic studies group of the ANSI/IEEE committee that issued the US 1992 Radiofrequency Radiation exposure guidelines.

See the 29 authors of the Bioinitiative here.

FALSE STATEMENT 32

MCPS states that, The World Health Organization (WHO) has concluded that, "In the area of biological effects and medical applications of non-ionizing radiation approximately **25,000** articles have been published over the past **30** years. Scientific knowledge in this area is now more extensive than for most chemicals. Based on a recent in-depth review of the scientific literature, **the WHO concluded that current evidence does not confirm the existence of any health consequences from exposure to low level electromagnetic fields**." Please review the information on the following website for further details: http://www.who.int/peh-emf/about/WhatisEMF/en/index1.html."

This is false because **it is not the conclusion of the WHO/IARC.**

The World Health Organizations International Agency for the Research on Cancer classified RF-EMF (radiofrequency electromagnetic fields, otherwise known as "wireless radiation") as a Class 2B Possible Human Carcinogen in 2011 based on credible evidence that linked long term wireless exposure to brain cancer.

- Read The Lancet's published statement by the IARC from 2011 on cancer risk of wireless radiation.
- The 2013 published Monograph shows the current evidence that led to that classification and states, "the average exposure from use of the same mobile phone is higher by a factor of 2 in a child's brain and higher by a factor of 10 in the bone marrow of the skull." Read these details on page 34 of the World Health Organization's International Association for Research on Cancer's published Monograph on Non-Ionizing Radiation, Part 2: Radiofrequency Electromagnetic Fields.

APPENDIX II

OUTDATED DOCUMENTS

Why is MCPS using reviews dated over a decade ago to show wireless is not a risk?

MCPS uses OUTDATED documents to justify its current position and MCPS' stated opinion that wireless is not a health hazard. However, any report before 2011 is inadequate because it was not until

2011 that most long term researxch on wireless (Interphone studies from several countries) was even published. The World Health Organization made its determination of RF as a Class 2 B Carcinogen in 2011. So looking at pre 2011 reviews is not the current best available science.

Nonetheless, MCPS presents these outdated reviews *which is misleading.*

OUTDATED DOCUMENT 1

MCPS cites the WHO Workgroup Report: Base Stations and Wireless Networks—Radiofrequency (RF) Exposures and Health Consequences

The possibility of RF health effects has been investigated in epidemiology studies of cellular telephone users and workers in RF occupations, in experiments with animals exposed to cell-phone RF, and via biophysical consideration of cell-phone RF electric-field intensity and the effect of RF modulation schemes. As summarized here, these separate avenues of scientific investigation provide little support for adverse health effects arising from RF exposure at levels below current international standards. Moreover, radio and television broadcast waves have exposed populations to RF for > 50 years with little evidence of deleterious health consequences.

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1849947/

MCPS forgets to state that this quote is from 2006. There is "little support for adverse health effects " because the major long term research studies were not even published at that time. *Why is MCPS quoting ten year old science?*

OUTDATED DOCUMENT 2 and 3

MCPS invalidates the Bioinitiative Report using two outdated references

1. The Australian Centre for Radiofrequency Bioeffects Research (ACRBR) published a position statement on the BioInitiative Report.http://www.acrbr.org.au/FAQ/ACRBR%20Bioinitiative%20Report%2018%20Dec%202008.pdf (OOPs this organization funded by the wireless industry closed its doors years ago and that might explain why the link does not work anymore.)
2. Health Council of the Netherlands 2008 Statement (not a report but a statement from 2008)

First of all these are 2008 Documents referencing the Bioinitiative Report 2007

Why is MCPS minimizing the Bioinitiative *2012* recommendations by referring to *2008* reviews to a *2007* Report? It makes no sense and all should take a minute to ponder this. These 2008 reports are inaccurate as they are outdated and do not incorporate current peer reviewed publications. The research has substantially increased since 2008 and of course the 2011 World Health organization Monograph was 4 years after that report. We have continuously provided MCPS with best available peer reviewed science. We have sent abstracts from peer reviewed published science where scientists call for precautions from wireless radiation. MCPS should use the current best available science instead of the outdated -non peer reviewed reports put out by known industry scientists as MCPS is currently doing on it's website.

Some facts about the Australian Centre for Radiofrequency Bioeffects Research: It seems the wireless industry itself provides funding for the work that they do. Read what it states on their website

'The ACRBR wishes to acknowledge the Australian Mobile Telecommunications Association for providing funding for this project," [17] It is also notes that Telstra is a funder of the organization. Perhaps most notably, there have been no a position papers issued since 2009. [18]

Notably: I have never sent MCPS the Bioinitiative recommendations asking that MCPS use them as thresholds so I do not understand why MCPS is assuming this? I have simply asked for MCPS to reduce unnecessary exposures by using safe technology whenever possible.
For example Why are kindergarteners being exposed to this radiation all day long? MCPS could easily decrease the radiation exposures to these young children by making simple changes to the wireless radiation installations.

OUTDATED DOCUMENT 4

The MCPS Summary Report states, "In addition, the World Meteorological Organization (WMO) conducted ambient RF EMF measurements in a variety of settings across the United States, including urban, suburban, rural, and airport environments (Leck, 2006). The WMO found no difference between the magnitudes of the RF EMF power density regardless of location."

The scientific citation Lerk 2006 is for a 2006 Report on results from measurements taken in 2004 and 2005. Leck, R. World Meteorological Organization, Results of Ambient RF Environment and Noise Floor Measurements Taken in the U.S. in 2004 and 2005, Commission for Basic Systems Steering Group on Radiofrequency Coordination, Geneva, March 16-18, 2006.

Why are 2005 measurements being used considering that *wireless was barely rolled out a decade ago, in 2005.* A lot has changed since 2005.

Note the following from a 2015 published paper , "**the contribution made to RF exposure from wireless telecommunications technology is continuously increasing and its contribution was above 60% of the total exposure. "**

The decade since 2005 is when Wi-Fi has been rolled out to schools, homes and public spaces, not to mention coffee shops. Furthermore there was not the saturation of Smartphones with the public and that will raise ambient RF levels in highly populated areas. This reference is clearly inapplicable today. It is outdated

OUTDATED DOCUMENT 5
MCPS cites the Center for Disease Control:

[17] http://acrbr.org.au/Research.aspx
[18] http://acrbr.org.au/FAQ.aspx

"In the last 15 years, hundreds of new research studies have investigated whether health problems can be linked to cell phone use. Some of these studies have suggested the possibility that long-term, high cell phone use may be linked to certain types of brain cancer. These studies do not establish this link definitively."
http://www.cdc.gov/nceh/radiation/factsheets/224613_faq_cell-phones-and-your-health.pdf

This Fact sheet is outdated and exists online as an example of the OLD cell phone page. Please see the CDC website explaining this in full at http://www.cdc.gov/nceh/radiation/cell_phones._faq.html
The CDC changed its website in 2014: Read about how the CDC initially called for caution. Read about this here.

OUTDATED DOCUMENT 6

Foster, K. R. Exposure Limits for Radiofrequency Energy: Three Models. World Health Organization, Conference on Criteria for EMF Standards Harmonization. Available at http://www.who.int/peh-emf/meetings/day2Varna_Foster.pdf.
page 3-3 Note: This is outdated at around the year 2000 as that is the most recent year cited. .

OUTDATED DOCUMENT 7
MCPS selectively quotes a 2010 Latin American Review. (It seems MCPS did not really do research to look at the review but instead just selectively took statements from a published article that cites the Latin American review International and National Expert Group Evaluations: Biological/Health Effects of Radiofrequency Fields) nonetheless this review is outdated and pre 2011, when the WHO made its classification. Perhaps more importantly the Chairman of this group Prof. Renato M.E. Sabbatini fyi has this on his resume.

- Scientific advisor, National Association of Cell Phone Operators (ACEL)
- Collaborator, Mobile Manufacturers Forum
- Collaborator, GSM Association

This brings us the final concern with MCPS's radiofrequency page- the use of wireless funded data.

APPENDIX III

Wireless Funded Research and Statements

MCPS Utilizes "Scientific" Reviews funded by the Wireless Industry or by Scientists who Are Consultants to the Wireless Industry.

WIRELESS INDUSTRY FUNDED SCIENCE REFERENCE 1
MCPS presents the 2010 "Latin American Review". This was organized by President of the Organizing Committe and Chairman, Prof. Renato M.E. Sabbatini who is also Scientific advisor to the

National Association of Cell Phone Operators and works with the Mobile Manufacturers Forum and GSM Association.

WIRELESS INDUSTRY FUNDED SCIENCE REFERENCE 2

MCPS says "Unequivocally, the RF exposures from Wi-Fi and wireless networks are far below U.S. and international exposure limits for RF energy."
MCPS has this link as the citation:
http://www.researchgate.net/publication/258102960_Wi-Fi_and_Health

MCPS forgets to say:

> *Acknowledgments*—This work was funded by the Wi-Fi Alliance, Washington, DC, and Mobile Manufacturers Forum, Brussels, Belgium. Neither organization had any role in the research for, or preparation of, the manuscript; and they had no knowledge of the contents or conclusions of this review prior to submission for publication. The opinions in this review are those of the present authors only.

The research study that MCPS quotes here was fully funded by the wireless industry and the scientists authoring it are long known to be industry consultants and collaborators. Author John Moulder for example is an industry consultant and decades long expert witness in various court cases for the wireless and energy company industry. Author Kenneth Foster also publishes papers financed, like this one, fully funded by the industry. Oh, he also goes on trips to Greece *funded by the industry.* In fact, scientists are calling for one of his recent works to be retracted because an analysis found systematic errors.

"The first possibility is that many authors of the 22 individual studies misinterpreted and/or misrepresented their review findings in their text summaries. This seems unlikely given the number of authors involved and the fact that the peer review process would need to have failed repeatedly for this to occur. The only other explanation is that a bias in the methods used by Foster and Chou introduced a systematic error in their abstraction of review results," stated the authors."

Read more about that here.

Who is the WiFi Alliance?

They are all the top tech companies from Cisco to Samsumg to Intel. Read the list of companies here. When schools inquire as the the health risks of wireless they also have a handy response that basically says- nothing to worry about, we met all regulations- plus *nothing is proven. This research was fully funded by the wireless industry and then is used to to justify wireless deployment.*

WIRELESS INDUSTRY FUNDED SCIENCE REFERENCE 3

Section 2.5.1 of the MCPS Radio Frequency Monitoring Report also quotes a study of Foster's "In 2007, Foster measured the RF signal from wireless devices in multiple settings (academic, commercial, health care) and multiple countries (USA and Europe). Foster found a number of interesting results…"

We assume this is a reference to the following 2007 study, RADIOFREQUENCY EXPOSURE FROM WIRELESS LANS UTILIZING WI-FI TECHNOLOGY found here
http://medfordumc.org/celltower/wifirfexposure.pdf

This research study states very clearly:

Acknowledgments— This work was supported by the Wi-Fi Alliance.

Such funding might explain why the almost decade old study has so many problems. It purports to show "low exposures" yet did not even trest near field exposures and did not even get a statistically valid sampling! . As it states, "No attempt was made in this study to assess near-field exposures to a user of the laptop itself." and "The measurement locations were chosen as a matter of convenience, not to provide a statistically valid sample of the environments (however that may be defined). " Despite the lack of looking at exposure to the laptop user and the lack of a statistically valid sample, , the paper is continuously used to show "safety". It seems to me to be an attempt to publish something that allays fears reiterating regulations are not surpassed and stating that, "any health concerns would seem to be moot."

WIRELESS INDUSTRY FUNDED SCIENCE REFERENCE 4
MCPS cites England's MTHR as concluding that, "No increased cancer risk from wireless technologies. No robust evidence of harmful effects. No definite demonstrable effects in children."

MCPs neglects to clarify that MTHR is the Mobile Telecommunications and Health Research Programme and its **Report 2012** gives the findings of 31 individual research projects, *funded by the telecommunications industry.*

WIRELESS INDUSTRY FUNDED SCIENCE REFERENCE 5
MCPs pulled most of its statements about international organizations from a 2014 paper entitled "International and National Expert Group Evaluations: Biological/Health Effects of Radiofrequency Fields" which states, "We thank Chung-Kwang Chou (chairman, SC-95 of the international committee on electromagnetic safety, Institute of Electrical and Electronic Engineers) for critical reading of the manuscript and helpful suggestions."
Left out is that CK Chou is just retired Chief EME Scientist for Motorola and published papers funded by the Wireless Alliance. Read about the scientific calls for his recent industry funded work on children and cell phones *to be retracted* here.

WIRELESS INDUSTRY FUNDED SCIENCE REFERENCE 6

MCPs says the Committee on Man and Radiation (COMAR "concluded that the weight of scientific evidence in the RF bioeffects literature does not support the safety limits recommended by the BioInitiative Group."

> *"One of the many organizations that have refuted the science behind the report is the Institute of Electrical Engineers, Inc., Engineering in Medicine and Biology Society, Committee on Man and Radiation (COMAR). The committee concluded that the weight of scientific evidence in the RF bioeffects literature does not support the safety limits recommended by the BioInitiative Group. For this reason, COMAR recommends that public health officials continue to base their policies on RF safety limits recommended by established and sanctioned international organizations such as the Institute of Electrical and Electronic Engineers International Committee on Electromagnetic Safety and the International Commission on Non-Ionizing Radiation Protection, which is formally related to WHO."* **See the COMAR outdated 2009 Report here http://www.ncbi.nlm.nih.gov/pubmed/19741364**

This report is from 2009 (so an example of outdated material) ***Since when was COMAR an expert group worth listening too above the Bioinitiative authors?*** COMARs website is here http://ewh.ieee.org/soc/embs/comar/ and it shows that the IEEE Engineering in Medicine and Biology Society, Committee on Man and Radiation (COMAR) *is basically mostly industry funded engineers who made a group.*

COMAR has a total of 3 officers, and 24 members and includes

- **Ken Foster**: Multiple industry funded research studies plus the trip to Greece.
- **Jerrold T. Bushberg:** He runs a health and medical physics consulting firm and has long served as an expert witness for the cell phone and broadcast industries on the health effects of RF energy, servicing, among others, Cingular Wireless, Crown Castle, Newpath Networks, and Verizon. Bushberg has also helped town officials evaluate proposals for siting cellular antennas and has testified for broadcasters who wanted to site high-power antennas on Lookout Mountain outside of Denver.
- **C-K Chou -** former Chief Scientist for Motorola
- **Antonio Faraone** of Motorola Labs – Corporate EME Research Laboratory
- **Ralf Bodemann** PhD Radiation Physicist for Siemens AG
- **Linda Erdreich,** is Exponent's Sr. Managing Scientist Exponent is the energy's Industry GO TO consulting firm to testify as "expert witness' when defending claims of harm.
- **Rob Kavet, ScD *** EMF Business Area Manager EPRI

(EPRI is an "independent" nonprofit scientific organization funded by the electric power industry in the United States.)

- **The Chair is Richard Tell** of Richard Tell Associates, Inc. which is "a scientific consulting business focused on electromagnetic field exposure assessment'

In fact, it is stated plain as day that their "technical information statement" reports are theirs alone and that their statements represent 'The statement of the committee". Their statements do not even represent IEEE as a whole.

N*o one is even reviewing these propaganda like statements and the MCPS tech group is putting it forward as some sort of truth? None of the COMAR members have medical degrees.* They are a self selected group of people writing their own statements with a very big fancy name. As they state "*COMAR does not establish safety standards, but it has an interest in the standards activity within its scope."* and their papers '*represent the consensus of the Committee*'.

I recommend that you take a look at the people who make up COMAR and compare their background and funding *to the people who wrote the Bioinitiative report.*

Why is MCPS using industry funded work to invalidate research showing wireless could be harmful?

WIRELESS INDUSTRY FUNDED SCIENCE REFERENCE 7
Another one of Ken Foster's articles is cited in the AECOM RF Report (total of 3)

Foster, K. R. Exposure Limits for Radiofrequency Energy: Three Models. World Health Organization, Conference on Criteria for EMF Standards Harmonization. Available at http://www.who.int/peh-emf/meetings/day2Varna_Foster.pdf.
page 3-3 Note: This is also outdated at around the year 2000.

WIRELESS INDUSTRY FUNDED SCIENCE REFERENCE 8

Yet another Foster article is cited in the AECOM RF Report

Foster, K. R. Response to Lora Lee Martin Regarding Smart Meters and EMFs, September 23, 2010, available at http://www.ccst.us/projects/smart/documents/foster_response.pdf.

APPENDIX IV

Misleading Statements

MISLEADING STATEMENT 1
The MCPS webpage selectively cites Group 2 B agents by naming others in the category which seem silly. "Here is a sampling of Group 2B agents classified by the IARC: magnetic fields (extremely low-frequency), aloe vera (whole leaf extract), coconut oil, coffee, dry cleaning, engine exhaust (gasoline and diesel), ginkgo Biloba extract, nickel (metallic and alloys), pickled vegetables, talc-based body powder, titanium dioxide (found in personal care products and in sunscreen), and amaranth."

- MCPS forgets to mention the dozens of *other* Group 2 B carcinogens such as lead, Chloroform, Welding fumes, Hexachlorobenzene, *many of which were pulled off the market before further testing was done.* Would we want these substances in our classrooms?

- MCPS also neglects to mention that many now 100% proven carcinogens that *used to be on the Group 2 B list* for a decade have since **moved** to a higher risk category such as styrene, DDT . These used to be on the Class 2 B list but have since moved up in risk.

It is misleading to put amaranth and aloe vera next to RF radiation. The WHO is clear that being in the same category does not mean that the risk is the same. Furthermore, the body of research is incomparable.

MISLEADING STATEMENT 2

MCPS quote the WHO as below

Non-Ionizing Radiations–Sources, Biological Effects, Emissions and Exposures

NRPB has made many measurements of exposure levels at publicly accessible locations around base stations. One study [12] reported measurements taken at 118 locations from 17 different base station sites. Average exposures were found to be 0.00002% of the ICNIRP public exposure guidelines and at no location were exposure found to exceed 0.02% of the guidelines.

The maximum exposure at any location was 0.00083 mWcm-2 (on a playing field 60 meters from a school building with an antenna on its roof). Typical power densities were less than 0.0001 mWcm-2 (less than 0.01% of the ICNIRP public exposure guidelines). (See Fig. 2) Power densities indoors were substantially less than power densities outdoors. When RF radiation from all sources (mobile phone, FM radio, TV, etc.) was taken into account the maximum power density at any site was less than 0.2% of the ICNIRP public exposure guidelines. [12, 13]

http://www.who.int/peh-emf/meetings/archive/en/keynote3ng.pdf

MCPS left out that this statement was from cell tower radiation readings in 2003.

Cell Tower radiation has substantially increased since 2003 as far more people are using cellphones and the radiation densities have increased because of this. The quotes information is from the Proceedings of the International Conference on Non-Ionizing Radiation at UNITEN (ICNIR2003) Electromagnetic Fields and Our Health 20 th–22 nd **from October 2003 .**

Why is MCPS quoting a paper on cell towers radiation that is entirely inapplicable to today's radiation exposures and using it to show RF is not a problem? This is misleading.

Concerning the World Health Organization WHO IARC scientists continue to publish research and commentary in medical journals detailing that there are *no safety assurances with wireless*. Please note the following:

Dr. Samet, Senior Scientist, Chair of the World Health Organization's International Agency for the Research on Cancer 2011 RF-EMF Working Group stated, "*The IARC 2B classification implies an assurance of safety that cannot be offered—a particular concern, given the prospect that most of the world's population will have lifelong exposure to radiofrequency electromagnetic fields."* in his 2014 Commentary calling for more directed research published in the journal *Epidemiology*.

It is misleading that MCPS has left out the following:

Many WHO scientists who served as IARC advisors on RF Radiation for the 2011 working group now state *that additional scientific evidence* indicates that wireless radiation should be re-classified as a "probable human carcinogen."

- "Radiofrequency fields should be classified as a Group 2A probable human carcinogen under the criteria used by the International Agency for Research on Cancer (Lyon, France)." Read the 2015 published review *by a group of scientists that includes World Health Organization EMF Working Group Experts* in the *International Journal of Oncology* entitled Mobile phone radiation causes brain tumors and should be classified as a probable human carcinogen (2A) (review) which also advises that the *as low as reasonably achievable* (ALARA) principle be adopted for uses of this technology.

The following experts were part of the WHO IARC's RF-EMF Review in 2011. Read their statements:

- **Dr. Chris Portier** "*A careful review of the scientific literature demonstrates there are potentially dangerous effects from RF*," stated Portier, a recently retired *CDC Director, Center for Environmental Health and the Agency for Toxic Substances and Disease* in his official call for invoking the precautionary principle with wireless. See also a poster presentation he penned for the conference here.
- **Dariusz Leszczynski,** WHO IARC expert, former Finnish government researcher, lectures widely on the urgent need for the precautionary principle. See slides from a recent lecture in Belgrade, Serbia attended by governmental officials. Read his laypersons article on the need for the Precautionary Principle here.
- **Dr. Anthony Miller** publishes research, lectures, testifies to government officials *on the increased evidence of risk from wireless technology*, and has four decades of expertise with the WHO IARC. See his testimony to the City of Toronto against cell towers here. Watch his 2014 lecture at Women's College Hospital here. Read his published research here.
- **Dr. Igor Belyaev** "There are many publications showing health effects of radiofrequency radiations. Approximately half of all published papers show such effects. This apparent discrepancy can be accounted for various conditions of exposure, because non-thermal RF effects are critically dependent on various parameters and also biological variables." Dr. Igor Belyaev is the Head Research Scientist at the Cancer Research Institute at the Slovak Academy of Science in Bratislava, Slovakia. Dr. Belyaev was one of the 30 members of the IARC Working Group tasked with classifying the carcinogenicity of cell phone radiation—the Group that produced the 2013 IARC Monograph. Please watch him speak at the National Press Club at this video link.
- **Dr. Lennart Hardell** published research in the *International Journal of Oncology* entitled Case-control study of the association between malignant brain tumours diagnosed between 2007 and 2009 and mobile and cordless phone use concluding, "This study confirmed previous results of an association between mobile and cordless phone use and malignant brain tumours. These findings provide support for the hypothesis that RF-EMFs play a role both in the initiation and promotion stages of carcinogenesis". Read his scientific blog with a letter to the WHO here.

Dr. Hardell is an International Agency for the Research on Cancer expert and now states that wireless *"should be regarded as human carcinogen requiring urgent revision of current exposure guidelines."*

- Read his 2014 research published in the *Journal of Environmental Research and Public Health* entitled Decreased Survival of Glioma Patients with Astrocytoma Grade IV (Glioblastoma Multiforme) Associated with Long-Term Use of Mobile and Cordless Phones which determined the use of wireless phones in the >20 years latency group (time since first use) was correlated to decreased survival for those diagnosed with astrocytoma grade IV. The conclusion reads, "Due to the relationship with survival the classification of IARC is strengthened and RF-EMF should be regarded as human carcinogen requiring urgent revision of current exposure guidelines."

In 2015 over 200 scientists appealed to the WHO and the United Nations to take immediate action to reduce health risks of wireless radiation and "the emerging public health crisis related to cell phones, wireless devices, wireless utility meters and wireless infrastructure in neighborhoods."

- Read the Medical Doctor and Scientists' Appeal here.
- Read the names of the Doctors and Scientists and their qualifications here.

MISLEADING STATEMENT 3

Spain: MCPS cites The Scientific Advisory Committee on Radio Frequencies and Health as stating that "To date, no scientific evidence that exposure to the low emissions levels of these systems produces adverse health effects in school children."

Interestingly, this organization does not exists anymore and as far as we know it is not the official position of the Spanish government's position on RF.(Often these "scientific" committees are created to invalidate the research and are funded by the industry.) MCPS misleads by putting it forward as a public health organization when it is NOT and forgot to mention this information about Spain:

- The Parliament of Navarra voted to urge removal of WIFI in schools and to apply the precautionary principle in relation to exposure limits to electromagnetic fields whose boundaries have become "obsolete".
    - The Parliament voted to adopt a resolution which calls to implement the Parliamentary Assembly of the Council of Europe resolution 1815 of 2011, which recommends to "review the scientific basis for the standards of exposure to electromagnetic fields" and " set thresholds for levels of preventive long-term exposure in all indoor areas not exceeding 0.6 volts per meter ".

- The Vitoria City Council unanimously approved a precautionary approach with wireless: Citizens will be informed of the location of wireless transmitters are in civic centers and municipal buildings. It is recommended that children's spaces such as playgrounds and family libraries, will be free of WiFi or have decreased wifi and wifi free zones will be established in playgrounds and building entrances.

- **The Basque Parliament** joined the resolution of the Parliamentary Assembly of Council of Europe in 2011, which warns of the "potential risk" of electromagnetic fields and their effects on the environment and urged the promotion of campaigns against "excessive use "mobile phones

among children.In a statement, the parliamentary Aralar, Dani Maeztustated, "To protect children's health, recommends the implementation of information campaigns and portable devices that emit microwaves, and prioritizes the use of cable connections in schools."

- **City of Tarragona Municipal Government (Tarragona is a major city 100 kilometres south of Barcelona) approved the "Institutional Declaration of support for people with Central Sensitivity Syndromes" including electromagnetic fields.** This means spaces are being set aside that are "white zones" meaning no RF radiation.

MISLEADING STATEMENT 4

MCPS states this about the BioInitiative Report" "This report was compiled, self-edited, and published by Cindy Sage and David Carpenter in 2007 and claims to be based in science." MCPS then goes on to negate the 2012 Report validity (addressed more in industry funded science section of this document as they reference a group made up of industry consultants)

This is a misleading and seems to be an attempt to delegitimize and discredit and neglects to inform readers that the Bioinitiative 2012 report was written by 29 authors from ten countries including ten MDs and 21 PhDs who are worldwide experts in the field. Authors include three former presidents and five members of the Bioelectromagnetics Society. One author is Chair of the Russian National Committee on Non-Ionizing Radiation, and another is Senior Advisor to the European Environmental Agency.

Dr. Carl F. Blackman former research scientist in the Environmental Carcinogenesis Division of the US Environmental Protection Agency who served on the World Health Organization committee to evaluate the health implications of radiofrequency radiation exposure (Environmental Health Criteria #137, 1993), on a committee of the International Agency for Research on Cancer (IARC) to evaluate the carcinogenic potential of low frequency electric and magnetic fields in 2001 (Volume 80, 2002) and as chair of the genetic studies group of the ANSI/IEEE committee that issued the US 1992 Radiofrequency Radiation exposure guidelines.

See the authors here.

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MISLEADING STATEMENT 5

MCPS quotes England's IET which is The Institution of Engineering and Technology as concluding that "No new robust evidence for adverse effects. Policy makers should consider all evidence including cost and benefits of mobile phone use."

Why is this misleading ? Because first, IET is not a public health institution. It is an engineering group whose website is filled with logos for various companies. They have an interest in promoting this technology and you can read their countless documents *all about using radiofrequency in the world.* This is not a scientific organization who understands biology and I am at a loss as to why MCPS would cite this as a public health group. That is tantamount to putting forth information on the toxicity of lead by an organization funded by paint companies.

MISLEADING STATEMENT 6

In the MCPS RF FAQS section on "Additional Information". MCPS shows " statements from major health organizations that have been involved in studying Radiofrequency for years but have not concluded

that Radiofrequency poses any adverse health effects" The entire section is misleading as it is cherry picking specific statements and leaving out others. For example:

MCPS quotes the World Health Organization:

> *"To date, no adverse health effects have been established as being caused by mobile phone use."*
> *"Studies to date provide no indication that environmental exposure to RF fields, such as from base stations, increases the risk of cancer or any other disease."*
> http://www.who.int/features/qa/30/en/

As mentioned and documented earlier in this document, the WHO has far more to say about RF than that quote. For example, later on this very same page it states that *"While an increased risk of brain tumours from the use of mobile phones is not established, the increasing use of mobile phones and the lack of data for mobile phone use over time periods longer than 15 years warrant further research of mobile phone use and brain cancer risk. In particular, with the recent popularity of mobile phone use among younger people, and therefore a potentially longer lifetime of exposure, WHO has promoted further research on this group and is currently assessing the health impact of RF fields on all studied endpoints."*

MCPS should be providing the whole story and not selectively quoting statements on the WHO's position.

MISLEADING STATEMENT 7

Previously MCPS stated and then removed the following:
"The 2B classification was based on studies of extremely heavy cell phone use: 1,640 hours or more per year, which is equal to holding a cell phone to the side of one's head for four hours a day, every day for an entire year."

The facts:

1. The 1640 hours linked to increased brain tumors in the Interphone Study pertained to ***lifetime*** *cumulative cell phone use (**not** annually as MCPS falsely states).*
2. Heavy use in the long term cell phone research informing the Class 2 B classification **was often defined** as 30 minutes a day over ten years (***not*** 4 hours a day as MCPS falsely states). Watch WHO IARC expert Dr. Bann state this clearly in this video here.

Then MCPS wrote "Using the Group 2B classification of the entire spectrum of radiofrequencies as an indication that Wi-Fi is harmful when the classification came about due to extremely heavy cell phone use and not Wi-Fi does not accurately represent the intention of the classification."
*and "The International Agency for Research on Cancer (IARC) classification of exposure to radiofrequency as possibly carcinogenic was based on **heavy mobile phone use**. "*

MISLEADING STATEMENT 7

What is misleading? MCPS removed it's clearly incorrect fact about what "heavy cell phone use" was but then *did not replace that text with easy to understand information.* "heavy cell phone use" is equivalent to 30 minutes a day and long term research shows an association between this amount of use and brain cancer. *Why won't MCPS post this information?*

MCPS states that "MCPS has made sure to review the exposure limits set by the FCC and the Occupational Safety and Health Administration and have ensured that the wireless networks in MCPS remain well below these established guidelines."

However the Occupational Safety and Health Administration states:

- "There are no specific standards for radiofrequency and microwave radiation issues." Read it on OSHA's website here.
- **OSHA has stated that RF could act as a cancer promoter:** OSHA also states that, "in 1987, the Hazard Evaluation and Technical Assistance Branch of the National Institute for Occupation Safety and Health (NIOSH) conducted a field investigation into possible health hazards at an acceleration laboratory9. NIOSH's report addressed both radio frequency (rf) and static magnetic fields. The report at its conclusion indicates that evidence that rf radiation alone can produce cancer was weak but it might act as a cancer promoter in animals." Read it here https://www.osha.gov/dts/hib/hib_data/hib19900207.html
- **NIOSH lists reproductive damage as concern.** "There have been reports which suggest an association between RF exposure and reproductive damage in animals and humans. These reports, primarily from Eastern Europe and the Soviet Union, list a variety of reproductive and developmental effects resulting from occupational exposures of workers and experimental exposures of laboratory animals to electromagnetic energy at frequencies in the RF and microwave ranges. Reported effects from exposure of women to fields of relatively high intensity RF and microwave energy have included changes in menstrual pattern, increased incidence of miscarriage, and decreased lactation in nursing mothers.13 Retarded fetal development and increased congenital anomalies have been noted among exposed offspring.13 Laboratory studies have shown that exposure of pregnant rats to RF energy (at levels believed to have been relatively high) resulted in numerous fetal malformations including abnormalities of the central nervous system, eye deformities, cleft palate, and deformation of the tail.14 There is a report of changes in spermatogenesis (production of male germ cells in the testicles) among workmen exposed to nonionizing electromagnetic energy.15 Reproductive effects in male experimental animals, including testicular damage, debilitated or stillborn offspring and changes in spermatogenesis, have been reported to be related to exposure to electromagnetic energy at microwave frequencies.16,17**"**
- **NIOSH validated that nonthermal effects can occur at levels that do not produce heating.** **"**Absorption of RF energy may also result in "nonthermal" effects on cells or tissue, which may occur without a measureable increase in tissue or body temperature. "Nonthermal" effects have been reported to occur at exposure levels lower than those that cause thermal effects. While scientists are not in complete agreement regarding the significance of reports of "nonthermal" effects observed in laboratory animals, NIOSH believes there is sufficient evidence of such effects to cause concern about human exposures. NIOSH and OSHA recommend that precautionary measures be instituted to minimize the risk to workers from unwarranted exposure

to RF energy." While this is from a very outdated report it is interesting that his is the information presented on the webpage. Read it here http://www.cdc.gov/niosh/docs/80-107/

- "While scientists are not in complete agreement on the interpretation of available data on biological effects, NIOSH believes there is sufficient evidence of such effects to cause concern about human exposures. **NIOSH and OSHA recommend that precautionary measures, as listed in Section V of the attached Appendix , be instituted to protect workers from unwarranted exposure to RF energy."**
- **Read it here. http://www.cdc.gov/niosh/docs/80-107/default.html**

It is notable that a December 2013 Report by the U.S. Department of Health and Human Services Centers for Disease Control and Prevention National Institute for Occupational Safety and Health finds that ediucation on RF and EMF exposures safet is lacking at a site and speaks to health concerns about low level exposures stating that:

"Much of what is known about RF biological effects pertains to acute (short-term) exposure; relatively little is known about the effects of long-term low-level RF exposure. Human and animal studies show that exposure to RF fields above OELs may cause harmful biological effects as a result of heating of internal tissues. The extent of heating depends primarily on the RF frequency, intensity of the RF field, and duration of exposure.
However, some researchers have reported that absorption of RF radiation may result in nonthermal effects that occur without a measurable increase in tissue temperature, and at RF field strengths lower than those that cause thermal effects [NIOSH/OSHA 1979; FCC 1999]. Read it here http://www.cdc.gov/niosh/hhe/reports/pdfs/2011-0097-3200.pdf

NIOSH pointed to weakness in US standards in 1994 "While the maximum permissible exposure levels defined by ANSIJIEEE C95.1-1992 are similar to those defined by other related publications [NCRP 1986; WHO 19931, NIOSH is concerned about the lack of participation by experts with a public health perspective in the IEEE RF standards setting process. For example, epidemiology studies were categorically rejected as not useful in the process of setting the ANSIJIEEE C95.1-1992 limits. This lack of public health perspective creates a weakness in the ANSIIIEEE C95.1-1992 standard that should be acknowledged by the FCC in adopting these guidelines for regulating occupational and environmental exposures to RF radiation."
"The exposure levels that would be set by the standard are based on only one dominant mechanism -- adverse health effects caused by body heating. Nonthermal biological health effects have been reported in some studies and research continues in this area [NCRP 1986; WHO 19931. The standard should note that other health effects may be associated with RF exposure and that exposure should be minimized to the extent possible." page 54 http://www.cdc.gov/niosh/hhe/reports/pdfs/1993-0424-2486.pdf

On OSHA's Hazards locations and Solutions webpage it states:
"Non-thermal effects, such as alteration of the human body's circadian rhythms, immune system and the nature of the electrical and chemical signals communicated through the cell membrane have been demonstrated. However, none of the research has conclusively proven that low-level RF/MW radiation causes adverse health effects." Read it here.

A 2002 Slide Presentation Implement an RF program where exposures exceed FCC "General Population" or Public limits

“Because of the scientific uncertainty, no Federal limits for worker exposures to EMFs have been recommended or established in the United States.” states NIOSH on a webpage last reviewed in 2014. Read it here http://www.cdc.gov/niosh/docs/96-129/

It is misleading for MCPS to present this agency as validating that MCPS is compliant when OSHA posts contradictory information on their website. They link to copious information (although *very* outdated) recommending precautionary measures on their website and talk about “insufficient information” and concerns with the FCC guidelines.

“Research continues on possible biological effects of exposure to RF/MW radiation.” In the first parargraph of their Safety and Health section.Read it here.

Teachers and staff at MCPS *do* have a possible work safety issue which OSHA and NIOSH has clearly not adequately dealt with. All the information from these agencies websites points to outdated reviews and “insufficient evidence”. In my opinion, this speaks to a dropping of the ball and a lack of accountability to workers. OSHA should responsibly be looking at exposures in schools, hospitals and government buildings now that such buildings have multiple transmitting antennas in addition to cell towers placed on the grounds.This issue has not received the attention needed considering the recent increase in exposure for workers throughout the country. MCPS should not be citing this agency and if so *MCPS should cite which specific regulation* they are even referring to (as no where on OSHA’s website did I find details pertaining to safety in work environments such as schools with dozens of access points, hundreds of cell phones and laptops transmitting continuously.)

PERHAPS THE MOST EGREGIOUS MISLEADING STATEMENT

Under the heading “**What were the findings of the RF Monitoring conducted in MCPS schools?”** MCPS seems to put forth the radiofrequency reading from AECOM as proof that the radiation is not a health risk stating that, *“All of the average power density results were several orders of magnitude below FCC regulatory limits. Note that measurements and regulatory limits were for six-minute time-averaged, whole body exposure. Average power density results were also below recommended levels from non-regulatory agencies, including the IEEE, the ICNIRP, and the Bioinitiative Report 2007.”* MCPS does not actually state that such levels are safe in any sentence but continuously states that the levels meet FCC guidelines. Most parents will view this as a statement that the level is too low to cause harm. Furthermore parents will not understand that such statement is meaningless when it comes to understanding the risk to students and staff.

Such a statement is inaccurate and misleading. Why?

1. 6 minutes is not in accordance with FCC limits for public exposures: In the US, regulations look at averages *over 30 minutes* , not 6 minutes as was done at MCPS. This is pointed out by Arthur Firstenberg in his letter to MCPS here. Therefore testing was not done in accordance to FCC regulations.

2. Average power density is not a way to understand the effect on biological systems. This report displays average power readings and does not report *peak pulses*. Best available science speaks to the importance of the pulsed nature of the signal. The measurements did not take into account peak pulses and therefore they are not helpful in understanding risk to students.

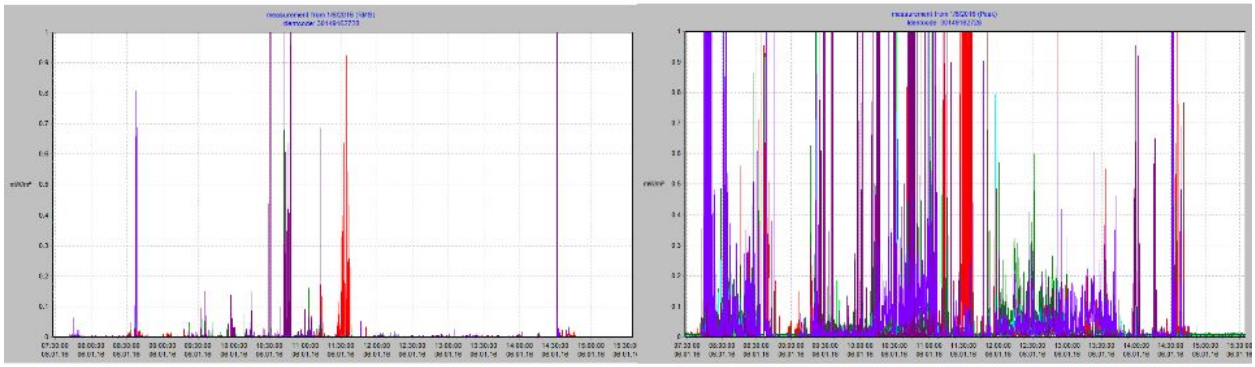
- **Department of the Navy, Aerospace Med Research Laboratory:** In *Some considerations concerning the use of magnetron generators in microwave biological research*, written by Vernon R. Reno for the Department of the Navy. at the shows that the waveform, as well as the type of instrumentation used to both create and measure the waveform are important when considering the biological effects of microwave radiation. Reno clearly states that "average" power density is an inadequate metric for assessing the effects on animals in experimental studies. By extension, it should be inadequate for monitoring exposure of human populations as well.

"Pulsed radiation is underestimated when "averaging" is used. That is a simple math fact. This fact is one reason that FCC regulations are outdated. Do the math. See below an example of how averaging is a method that skews understanding exposures. The first Figure shows all frequencies. The second shows just WLAN 2.45 frequencies.

Measurements From An MCPS High School 7:45 am to 3:00pm

All Frequencies Shown Graphed up to 1mW/m2

Average Exposures	Peak Exposures
This is how MCPS measures radiation.	**This is the actual exposure to the student.**



Averaging minimizes the peak levels.

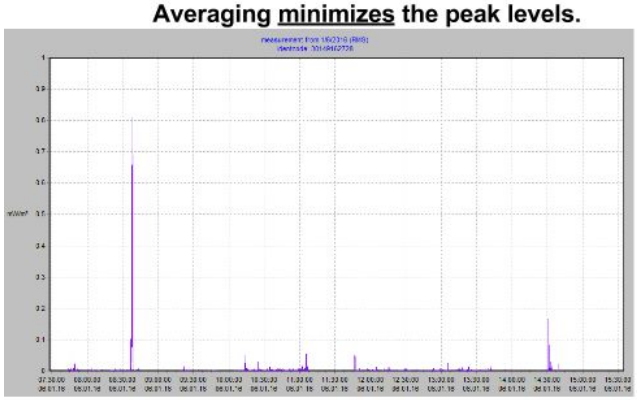
These graphs show the results of measurements done with an ESM 140 Dosimeter worn on the arm for a 2015 school day at an MCPS School.

Measurements From an MCPS High School 7:45 am to 3:00pm

WLAN Wi-Fi 2.45 only, Graph until 1 mW/m2

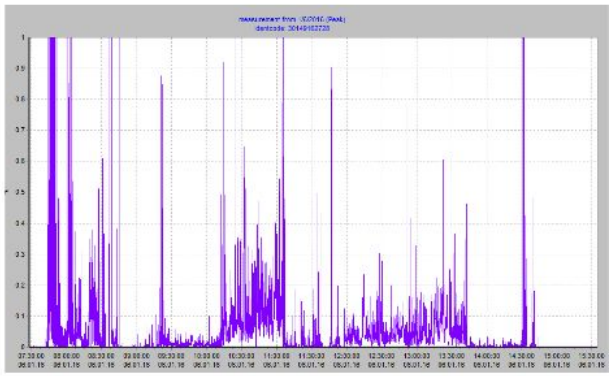
Average WLAN Exposures

This is how MCPS measures radiation.
Averaging minimizes the peak levels.



Peak WLAN Exposures

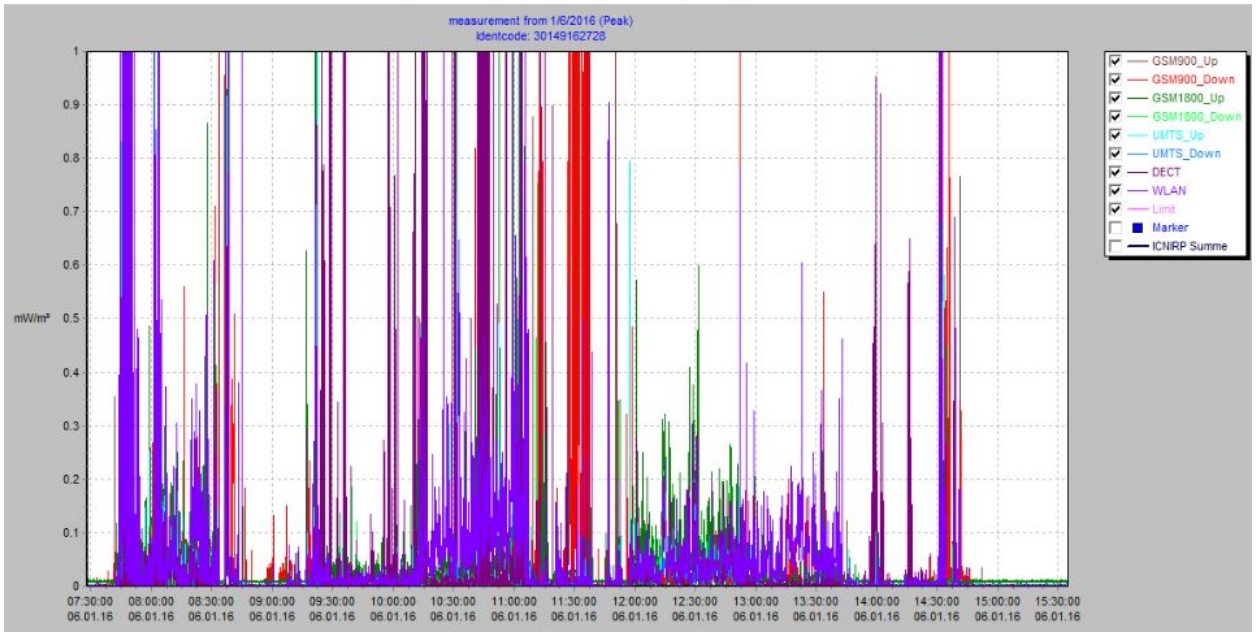
This is the actual exposure to a student.



These graphs show the results of measurements done with an ESM 140 Dosimeter worn on the arm for a 2015 school day at an MCPS School.

A child in a classroom is exposed to the sum of frequencies from transmitters in the room. MCPS only looked at WLAN. Therefore, MCPS did not fully detail exposures in classrooms because they did not account for cell phone use in class as a source of exposure. See below the same graph as in Figure 1 with the Key showing all frequencies.

Measurements at MCPS High School
All Frequencies, Peak Exposures, Graph until 1 mW/m2



The above graphs are from a specialized instrument that took measurements at a local MCPS High School a few weeks ago. A report will soon be prepared showing the results for the community. The Dosimeter used is a ESM-140 and it is able to identify and measure all of the frequencies in the classroom from GSM 900 to WLAN at 2.45 GHz. It does not measure 5 GHz so it in fact is an underrepresentation of exposure in the school.

3. Exposures could be 100 fold more than average power densities. Please read what Mikko Ahonen PhD, Lena Hedendahl MD and Tarmo Koppel MSc wrote MCPS in December 2015

> "In the Comparison-table 2.2. the MCPS provides only average values, no peak values. In cell phone technologies (like GSM) the difference between average and peak value is 2-fold. In Wireless local area technologies like Wi-Fi, the difference between average value and peak value is up to 100-fold (Ferro & Potorti, 2005). Note that in the table 2.2. by the MCPS only average values are presented. Later you provide in the chapter 7.2.2 Maximum, Instantaneous Power Density, which needs attention since these levels occasionally exceeded in your school measurements allowable EMC-levels (EN60601-1 3 V/m) for medical instruments (Robinson *et al.*, 2003)." Read it here.

4. The RF Summary did not document the transmitting sources in the room measurements were taken. None of the following was noted: Distance from the AP for the Chromebooks tested, Number of end devices in use at the time nor the type or amount of data transferred, Number of cell phones transmitting in room nor their location (some classes have policies stating no phones in the class and others encourage cell phones so that should have been noted) , Location of antennae on Laptop and angle from antennae,

Why is this important? The AP can only service one end user at a time. Multiple end users generates additional EMFs because of the need to reconnect. The closer the end device is to the

AP, the lower the signal strength necessary to transmit the information between the two devices. Similarly, the farther away the end device is from the AP, the stronger the signal that must be employed for the AP to accurately receive and transmit. Yet at the same time, a very close access point results in continuous exposures to those seated nearby. Sitting near an access point when no laptops are in use will present a different exposure than if all laptops are in use. The exposures might be far higher depending on these variables.

Without any of this exposure information, the numbers are simply not useful and do not thoroughly document actual exposure to children in MCPS schools.

Common scenarios are not accounted for in the MCPS Report:

> What about the child using the laptop to download a video at a location far from the AP?
>
> What about the child sitting directly under the AP while the room of 30 are downloading a video at the same time?
>
> What about the teacher standing directly under the AP with their head a few feet from the AP while all 30 kids are downloading?
>
> What about the children sitting with laptops on their laps huddled together on the floor close together so in circles of 4 or more children? (that would mean each child is receiving exposures for the other laptops.)
>
> What about the use of cell phones as classroom tools? What about how students transport these cell phones around the school building?

The MCPS Report did not detail these critical scenarios and thus cannot present its "findings' as applicable to the students exposure. It is important to note the I have addressed issues of radiofrequency exposures from laptops as well as cell phones and other wireless devices in my communications with MCPS and yet MCPS did not account for any exposures from cell phones in this measurement report.

MCPs has the students using the MCPS network ON STUDENTS phones. Therefore MCPS is accountable and should be responsible for cell phone exposures as well as any exposures from devices brought in as part of the Bring Your Own Device Policy.

4. Multiple experts have written to MCPS detailing technical concerns about the Radiofrequency report. They state the instrumentation was inadequate, the scenarios were not documented and the measuring set up inadequate to properly represent children's exposures. Equally important, the reference standards employed are **out of date.** There is a sufficient number of concerns that it seems this Measurement Report *cannot* be used to verify whether the radiation levels are safe or harmful.

> "The instrument cited as being used for the peak measurements in section 7, a Narda SRM-3006, is not suitable to measure the very short (1 millisecond) spikes typically found in WiFi 802.11n communication."
>
> " The conclusions of this report cannot be said to give a positive assertion of safety because of the degree of uncertainty over whether the testing equipment was adequate (we believe it was not); the lack of comparison data; and the failure to measure RF exposures at realistic distances from the student(s)."
>
> **-Cindy Sage And Professor Trevor Marshall in their letter to MCPS found here.**

"In the Comparison-table 2.2. the MCPS provides only average values, no peak values. In cell phone technologies (like GSM) the difference between average and peak value is 2-fold. In Wireless local area technologies like Wi-Fi, the difference between average value and peak value is up to 100-fold (Ferro & Potorti, 2005). Note that in the table 2.2. by the MCPS only average values are presented. Later you provide in the chapter 7.2.2 Maximum, Instantaneous Power Density, which needs attention since these levels occasionally exceeded in your school measurements allowable EMC-levels (EN60601-1 3 V/m) for medical instruments (Robinson et al., 2003)."

"In order to assess power density exposure in near field one needs to measure both electric and magnetic field components."

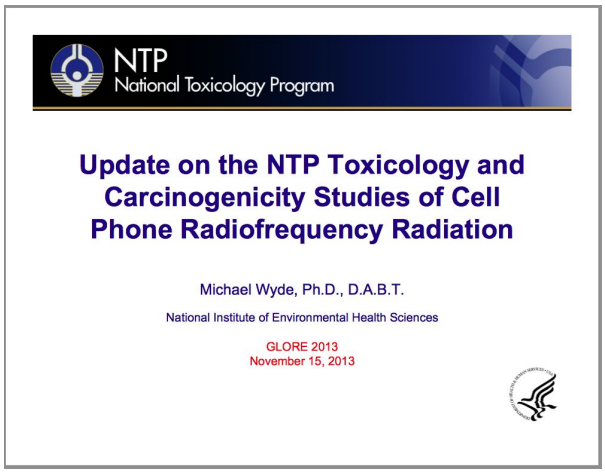
"The MCPS has not provided information about Wi-Fi technology, namely it's beacon signal."

-Technical Experts Mikko Ahonen PhD, Lena Hedendahl MD and Tarmo Koppel MSc
Read it here.

Overall, MCPS' Website Statement on Radiofrequency is filled with false facts and not therefore a reliable source of information. The MCPS Measurement Report does nothing to progress an understanding of safety at Montgomery County Schools.Therefore there is no proof of safety.

APPENDIX V

The National Toxicology (NTP) Study on Rodents and Radio-Frequency



Objective: To identify potential toxic and carcinogenic effects associated with chronic exposure to modulated cell phone radiofrequency radiation (RFR) and to characterize dose-response relationships in animals.

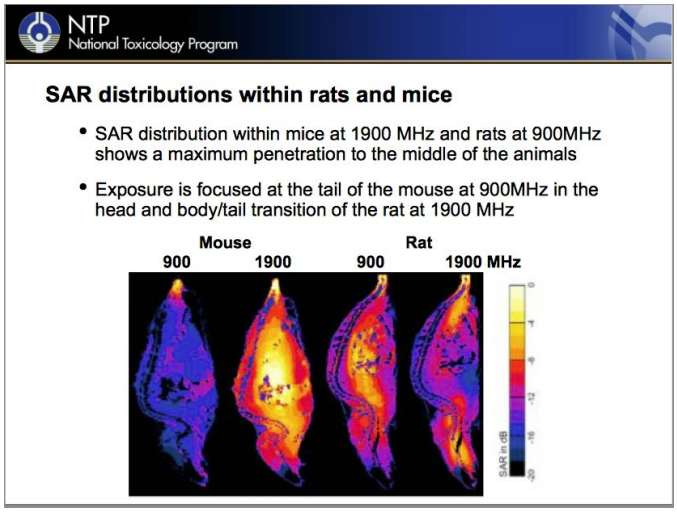
First proposed in *2001*, the laboratory studies on mice and rats examine exposure to frequencies centering around 900 megahertz and 1900 megahertz, as well as the two 2G (second generation) modulations used for voice transmission—CDMA and GSM. The study is seriously behind schedule.

2009 NTP Update: At a Senate hearing in 2009, Dr. John Bucher, Associate Director of the National

Toxicology Program of the National Institutes of Health, made the following apologetic statement regarding the aforementioned $25+ million NTP research project:

> "The pilot studies are nearly complete. Subchronic studies will begin early next year and the chronic toxicology and carcinogenicity studies will start in late 2010, finish in 2012, with peer review and reporting in the 2013-2014 time frame."

See slides from NTP in 2009 about the set up including this image of the mice below. http://mommath.cy1000.com.tw/register/download/PPT5.pdf



"These studies will be conducted at multiple power levels and will include special emphasis on potential adverse effects in the brain. In addition to histopathological evaluations for toxic or neoplastic lesions, special studies will examine effects on the blood brain barrier, neonatal cell migration patterns in the brain, and DNA strand breaks in brain cells."

Read a fact sheet on the way the study will be set up here.

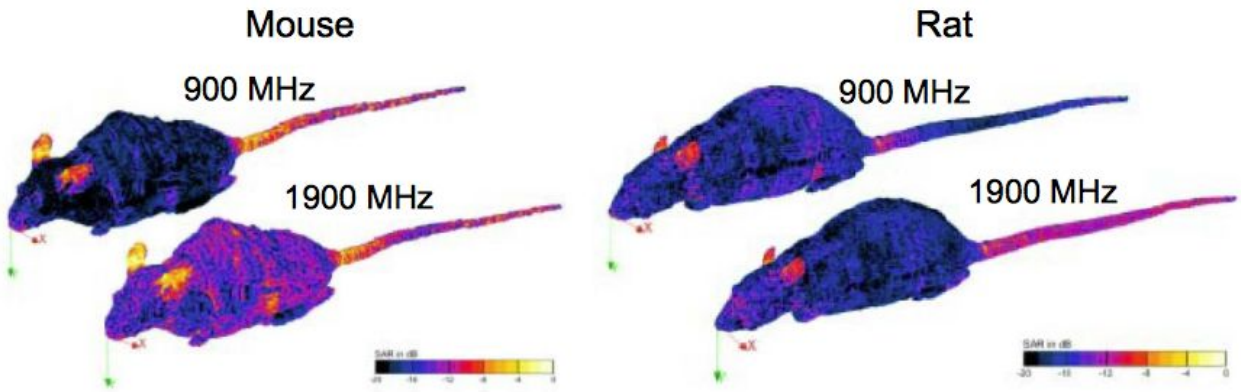
2013 NTP Report: "Pilot NTP experiments found that rats did respond to both GSM and CDMA cell phone radiation. Those exposed before and after birth gained weight more slowly. The exposure levels were lower than government regulations and low enough to challenge the widely-held view that wireless radiation is harmless. Importantly, the observed effects were dose-dependent." In english this means that these low levels did cause biological changes.

Read more at Microwave News and see the Powerpoint Slides from NTP in 2013

NTP
National Toxicology Program

Dosimetric modeling study results

- Surface distributions clearly indicated overexposure of the tail in mice at 900MHz and rats at 1900 MHz



- Considerable difference in the whole-body averaged absorption efficiency of the mouse at 900 and 1900 MHz
  - Poor uniformity of absorption at 900 MHz in mice